
Medical Utilization Patterns of Migrant Farm Workers in Wayne County, New York

PETER S. K. CHI, PhD

Dr. Chi is an Associate Professor in the Department of Consumer Economics and Housing at the College of Human Ecology, Cornell University, Ithaca, NY 14853.

This is a revised version of a paper presented at the August 1984 meeting of the Rural Sociological Society in College Station, TX.

Tearsheet requests to Dr. Chi.

Synopsis

A representative sample of 218 migrant farm workers was randomly drawn in Wayne County, NY, during the summer of 1982. Three distinct migrant groups were identified: immigrants, recent

migrants, and long-term migrants. Medical utilization patterns, including physician visits and use of medical services in the community health center, were compared among the three migrant groups. The determinants of physician visits were examined in a multiple regression model.

The focus was also placed on types of health problems for which medical treatment had been delayed, and the reasons for the delay were clearly identified. Furthermore, this study examined migrants' subjective assessment of quality of health care in the community.

The results of this study indicate that the provision of comprehensive health programs, removal of structural barriers in the health delivery system, and a program of migrant health education are the necessary steps to alter the medical utilization behavior of migrant farm workers.

ALTHOUGH MIGRANT FARM WORKERS have attracted considerable attention among researchers in recent years, the subjects of health care and health status as related to this group have not been systematically studied. In the Northeast, the large majority of previous studies of migrant workers have focused primarily on migration streams and characteristics of migrants (1-3).

Studies of migrant health care in other regions can generally be characterized into two types. The first type tends to center around providers of health services and comparisons of the relative quality, coverage, and costs of medical services between migrant clinics and private physicians (4-7). The second type focuses on the medical utilization patterns of migrant farm workers (8-9). Some of these studies are descriptive in nature, and their empirical data have been based on nonrepresentative samples. Consequently, few multivariate models of migrant medical utilization patterns have been constructed. Furthermore, the relative importance of significant factors in relation to utilization behavior has not been systematically ascertained.

Since little systematic analysis of migrant health care has been undertaken, a brief review of general health literature may provide a foundation for the design of a multivariate study of the medical utilization patterns of migrant farm workers. For the gen-

eral population, three major approaches have been followed to explain the complicated relationship between various determinants and the utilization of health services. The first approach, a social-psychological perspective, suggests that utilization behavior is primarily a function of knowledge and perceptions of vulnerability to disease, severity of a health problem, perceived benefits, and barriers to taking action. This approach uses social and behavioral attributes to predict individual utilization behavior (10-15). Furthermore, the psychological and cultural makeup of different racial and ethnic groups is considered to have a major influence on their use of health services (16-22).

The second approach, a resource and opportunity perspective, claims that utilization behavior is largely a result of the availability and accessibility of health services. This approach emphasizes the structural or contextual variables derived from organizational, economic, and ecological frameworks. It attempts to establish functional relationships between ecological distance, economic costs, community resources, and the recipients of health services (23-27). In support of this perspective, a few studies specifically indicate that differences in utilization behavior tend to disappear when access to health services is substantially improved for disadvantaged groups (15,28-30).

The third approach takes a holistic perspective that synthesizes the principal features of the other two approaches. In this approach, utilization behavior is a joint function of individual attributes and organizational factors. The holistic perspective emphasizes that health care study should be conducted with explicit concern for the economic, ecological, and organizational contexts in which individual utilization behavior takes place (31–37).

Because of its comprehensiveness, the holistic approach has been followed in this paper. The paper's major purpose is to determine the significant factors affecting use or nonuse of health services among migrant farm workers.

Data

This study is based on data obtained from the New York Migrant Health Interview Survey conducted in Wayne County, NY, in the summer of 1982. In order to obtain a representative sample of migrant farm workers from which to collect health statistics and related information, a special sampling procedure was designed for this survey. The first step was to compile a comprehensive list of addresses for all migrant camps and other migrant housing units in Wayne County. All units on the list were stratified according to the size of maximum capacity. The total number of migrants that could be accommodated in each size category was known. A representative sample of 218 migrants was randomly drawn through a three-stage sampling procedure from all size categories (the sample size was determined by budget constraints). Special efforts were made on October 21, 1982, to find out from owners of migrant camps and other housing units how many migrant workers were actually living in the units. On the assumption that the sampled migrants had characteristics similar to those of migrants enumerated on October 21, the interviewed migrants can be considered a representative sample of total migrant workers in Wayne County on that day. The detailed sampling procedure has been described elsewhere (38).

During the 1982 migrant health survey, seven Cornell undergraduate students were hired as interviewers, and one graduate student as project coordinator. All the interviewers had some survey experience through course work in field studies or in research methods. They were also trained in special sessions designed for the migrant project. The project coordinator assigned sampled camps or housing units to interviewers and supervised their daily interview activities. Before the actual interviewing

began, the coordinator sent letters to local growers, requesting permission for the interviewers to enter farms and to interview randomly selected migrants.

The survey instrument contained 113 items, covering the migrant farm worker's individual and family characteristics, his or her health habits and attitudes, health status, utilization of health services, home community characteristics, and the physical environment of the current residence. Just before the scheduled interview period, a preliminary test of the questionnaire was conducted among 10 migrant farm workers in the county, and appropriate revisions were made.

Socioeconomic Characteristics

Wayne County is one of the leading areas of central New York in the production of apples, peaches, and other fruits. Harvesting and processing these crops depend largely on the seasonal migration of farm workers. Of the 218 migrant farm workers in our sample, 167 were born in the United States. In other words, 76.6 percent of the total sample were native-born Americans. Of the remaining 51 respondents, 44 percent reported that they were naturalized American citizens. Only 29 were either unnaturalized permanent residents of the United States or illegal aliens.

Although all migrant farm workers usually engage in similar farm work (harvesting fruits in the field or processing fruits in the canning plant), they are not a homogeneous social group. Previous studies have found that black American migrant farm workers differed from black immigrants in work conditions, work attitude, work productivity, and mobility opportunities (1,39–41).

In our Wayne County survey, three distinct migrant groups were identified. The first group consisted of immigrants from Puerto Rico or from other countries (mostly Haiti and Jamaica); the second group, recent migrants, included native-born farm workers who had made seasonal migrations to New York State for less than 3 years; and the third group, long-term migrants, was composed of those native-born farm workers who had made a seasonal migration to New York State for 3 or more years. Table 1 shows the distribution of selected socioeconomic characteristics for these three groups.

The data indicate that recent migrants were significantly younger and had a higher educational level than long-term migrants. The former group had a higher proportion of single persons and had worked a shorter period of time as migrant workers than the latter group. In the immigrant group, more

Table 1. Socioeconomic characteristics of migrant farm workers in Wayne County, NY, 1982

Characteristics	Total	Immigrants	Recent migrants	Long-term migrants
Age:¹				
Mean years	34.79	33.97	28.75	38.56
Number of respondents	215	48	66	101
Education:²				
Mean years	9.46	7.60	11.32	9.29
Number of respondents	214	47	66	101
Number of years as farmworkers:³				
Mean years	13.17	8.02	6.91	19.10
Number of respondents	211	46	65	100
Number of years of farmwork for this employer:⁴				
Mean years	4.68	2.55	1.94	7.24
Number of respondents	215	48	66	101
Weekly wages:⁵				
Mean weekly wage	\$212.06	\$248.02	\$207.19	\$191.42
Number of respondents	131	33	36	62
Sex:⁶				
Percent male	76.6	92.09	66.99	74.54
percent female	23.4	7.91	33.01	25.46
Number of respondents	217	51	60	106
Marital status:⁷				
Percent single	39.16	31.18	63.30	29.49
Percent married	37.25	48.05	15.27	44.36
Other	23.59	20.77	21.43	26.15
Number of respondents	217	51	60	106
Total household income in 1981:⁸				
Percent earning \$0–3,000	31.43	23.35	42.00	29.08
Percent earning \$3,001–6,000	34.31	33.48	36.00	33.72
Percent earning \$6,001–9,000	21.58	27.00	14.32	23.26
Percent earning \$9,001 or more	12.67	16.17	7.68	13.93
Number of respondents	203	46	57	100

¹ $F = 15.4, P < .001$ ² $F = 25.32, P < .001$ ³ $F = 34.1, P < .001$ ⁴ $F = 38.46, P < .001$ ⁵ $F = 2.02, P < .14$ ⁶ $\chi^2 = 10.14, P < .01$ ⁷ $\chi^2 = 23.54, P < .001$ ⁸ $\chi^2 = 7.062, P < .32$

than 90 percent were male, and this group had the lowest educational level of the three groups.

Besides these differences, four additional observations are particularly worth pointing out. First, respondents in our sample had worked an average of 13.2 years as farm workers, and also had worked for more than 4 years for the same employer. This persistent work history suggests that migrant farm workers, particularly long-term migrants who on the average had worked 7.24 years for the same employer, are loyal workers in agriculture and should be considered an integral part of the community rather than be treated as drifters. Second, more than 48 percent of the immigrants were married (the highest proportion among the three groups); a large proportion of them had left their families at home and worked alone in New York. Third, since more than 95 percent of the sample were blacks, no significant difference in racial composition was found. Fourth, no significant differences in average weekly wages and annual household income were found among the three groups

(both F and χ^2 are not significant). All groups earned the same level of average weekly wages in 1982 (around \$212) and had similar annual household incomes in 1981. (Mean annual household income for the sample was \$5,327, and more than 60 percent of all migrant households earned less than \$6,000.) Although these migrant groups have similar economic status and racial composition, they are quite distinct in other social and demographic characteristics. Therefore, migrant status (the classification of three migrant groups) will be a key variable in this study of the medical utilization patterns of migrant farm workers.

Diagnostic and Preventive Medical Care

The migrant farm workers were asked to give information about their use of professional health care services and facilities, including visits to dentists and physicians and overnight stays in hospitals. In this section, visits to physicians will be analyzed in a multivariate model. The dependent

variable is number of visits to a physician's office or clinic during the past 12 months. The physician visits reported here included not only physical examination or immunization but also some visits for illness in which patients were given injections, X-rays or medical tests. This question was designed to reflect the extent of diagnostic and preventive medical care.

In the health literature, the independent variables used to predict utilization of health services have been broadly categorized into three dimensions: need for care, predisposition to use health services, and enabling factors (33,42-45). The first dimension, need for care, represents the most important concern affecting a person's likelihood of seeking medical care. It is usually measured by individually perceived symptoms of an illness, the person's response, and evaluation of the illness's disabling effects, or by medical assessment of health status and physician-rated urgency of the condition. In this study, the respondent's self-assessed health status 2 years ago is used to measure this dimension. It was hypothesized that the lower the health status 2 years ago, the more likely the migrant would be to visit a doctor for diagnostic and preventive care.

The predisposition to use health services, the second dimension, may be influenced by sociological and demographic variables such as age, sex, race-ethnicity, education, religion, and family size and composition. It may also be affected by psychological variables, including attitudes and beliefs related to health care and skepticism about the value of health services or the medical profession. In this study, since more than 95 percent of respondents are blacks, race is not included as an independent variable. Age, sex, marital status, and educational level are the typical predisposing variables and are treated as independent variables in our model. One unique variable, migrant status, represents membership in one of the three distinct migrant groups. Since, as indicated in the previous section, these migrant groups are quite heterogeneous in sociological and demographic characteristics, it is appropriate to include migrant status in a multivariate analysis. Responses to the several psychological questions on health attitudes and beliefs asked in the survey were not used in the model because these responses reflected current psychological conditions. It is not logical to predict visits to physicians over the past year on the basis of current attitudes, because current attitudes may be affected by earlier behavior.

The hypothesized relationships between these predisposing variables and the dependent variable

'It is interesting to note that one-quarter of all migrant farm workers expressed fear of the medical profession or disbelief in it as a reason for not seeking medical services.'

are presented in table 2. Since migrant status has never been used in previous studies, some additional discussion on this variable is needed. Of the three migrant groups, long-term migrants were chosen as a reference group for comparison; this group was the omitted category in the regression analysis. Since immigrants had the lowest educational level and were predominantly male (table 1), their level of visits to physicians was hypothesized to be lower than that of long-term migrants. Recent migrants had a higher level of education than long-term migrants (table 1); they might therefore be expected to have a higher level of visits to physicians. However, recent migrants were also significantly younger (table 1) than long-term migrants, so their need for diagnostic and preventive care might be less. As a result of these two opposing forces, it was hypothesized that the level of visits for recent migrants would not be significantly different from that of long-term migrants.

The third dimension, enabling factors, reflects the conditions that may either facilitate or impede a person's decision to seek health care. These factors include family or individual resources (income and health insurance coverage), accessibility of health services (knowledge about health services, time and distance to health facilities), and characteristics of the health care system (methods of financing and organizational types of health providers). In this analysis, household income, presence of Medicaid or other insurance, and knowledge about the health center in Wayne County are the selected enabling factors. All these variables were hypothesized to have a positive relationship with visits to physicians.

Detailed measures of all dependent and independent variables used in the model are presented in table 2. The method of analysis used in this study is the ordinary least squares (OLS) multiple regression. The relative importance of significant independent variables is determined in terms of standardized partial regression coefficients (beta weights).

Table 2. Measurements and hypothesized relationships between dependent and independent variables used in the regression analysis of physician visits

<i>Description of variables</i>	<i>Measurement</i>	<i>Hypothesized relationship</i>
<i>Dependent variable</i>		
Physician visits	Number of visits for injections, X-rays, tests, or examinations during past 12 months	
<i>Independent variables</i>		
Predisposition to use health services:		
Age	Range from 18 to 64 years	Positive
Sex	1 = male; 0 = female	Negative
Marital status (one subcategory must be omitted in the equation):		
Single	1 = yes; 0 = no	Negative
Married	1 = yes; 0 = no	Positive
Other	1 = yes; 0 = no	(¹)
Education	Highest grade completed in school	Positive
Migrant status (one subcategory must be omitted in the equation):		
Immigrants	1 = yes; 0 = no	Negative
Recent migrants	1 = yes; 0 = no	Negative or positive
Long-term migrants	1 = yes; 0 = no	(¹)
Enabling factors:		
Household income	1981 nominal income in the following categories: 1 = \$0–3,000; 2 = \$3,001–6,000; 3 = \$6,001–9,000; 4 = \$9,001–12,000; 5 = \$12,001–15,000; 6 = \$15,001–20,000; 7 = \$20,001–25,000; 8 = \$25,001–30,000; 9 = \$30,001 or more	Positive
Medicaid	1 = yes; 0 = no	Positive
Other insurance	1 = yes; 0 = no	Positive
Knowledge about the health center in the community	1 = yes; 0 = no	Positive
Need for care:		
Self-assessed health status 2 years ago	1 = worse than today; 2 = same as or better than today	Positive

¹ The missing subcategory in the equation will be used as a framework of reference for comparison with other subcategories.

Table 3. Visits to a physician's office or clinic for injections, X-rays, tests, or examinations during the past 12 months, by migrant status (column percentage)

<i>Number of visits¹</i>	<i>Total (N = 210)</i>	<i>Immigrants (N = 49)</i>	<i>Recent migrants (N = 58)</i>	<i>Long-term migrants (N = 103)</i>
None	35.15	50.74	27.90	31.79
Once	29.40	33.99	35.26	23.87
Twice	12.95	0.92	17.31	16.25
Three times	11.82	12.75	6.04	14.65
Four or more	10.68	1.61	13.48	13.45

¹ $\chi^2 = 21.24, P < .01$.

Table 3 reports the frequency distribution of the dependent variable, physician visits, by migrant status. Among the three migrant groups, long-term migrants tended to use medical services most frequently (more than 44 percent had visited physicians or clinics two or more times during the past year). Among nonusers, recent migrants had the

lowest proportion (28 percent) while immigrants had the highest (51 percent).

Table 4 shows the results of the multiple regression analysis on diagnostic and preventive medical care for migrant farm workers. Of the 10 independent variables, 3 were significantly related to variation in number of visits to physicians.

First, female migrants visit physicians more frequently than their male counterparts. The same sex differential in medical utilization patterns has been consistently found in previous studies (42,46). Second, immigrants visited physicians significantly less than long-term migrants (the omitted dummy category in the equation). This finding may indicate the general ignorance of the preventive health concept among immigrants; they usually called upon the medical profession only when their symptoms of illness reached crisis proportions. It may also reflect the fact that many immigrants lack knowledge of the local health service facility (table 5). Furthermore, some Caribbean immigrants may prefer folk medi-

Table 4. A regression analysis of diagnostic and preventive medical care for migrant farm workers

Independent variables	Partial regression coefficient	Standard error	t test	Beta weight
<i>Predisposition to use health services</i>				
Age .....	.0047	.0142	.334	
Sex	-.6750	.3271	¹ -2.064	.156
Marital status:				
Single	-.4689	.3662	-1.280	
Married	-.2948	.3609	-.817	
Other .....	...	...	...
Education	-.0104	.0584	-.178	
Migrant status:				
Immigrant	-1.0210	.3983	² -2.563	.216
Recent migrant	-.0783	.3596	-.218	
Long-term migrant .....	...	...	...
<i>Enabling factors</i>				
Household income .....	.1804	.1171	1.541	
Medicaid	1.1174	.4577	² 2.442	.183
Other insurance .....	.2701	.3133	.862	
Knowledge about health center	-.2357	.3455	-.682	
<i>Need for care</i>				
Health status 2 years ago .....	.1371	.3936	.348	
Constant term	2.1485	1.0677	¹ 2.012	
Mean (dependent variable)		1.639		
Number		186		
R ² (adjusted) .....		.0708		
F value		² 2.175		

¹ Statistically significant at 5 percent level.

² Statistically significant at 1 percent level.

cine to modern medical treatments because of their unique cultural and religious traditions (47,48). As hypothesized, no significant difference was found between recent migrants and long-term migrants in seeking diagnostic and preventive medical care. Third, having Medicaid insurance increased the likelihood of migrant farm workers' visiting physicians for diagnostic and preventive health care, because Medicaid usually provides full payment of medical expenses. This finding is consistent with the findings of previous studies, in which Medicaid coverage was associated with increased use of health services in the general population (49). Of these three significant variables, the most important one related to visits to physicians is migrant status (it has the highest beta weight, 0.216), followed by Medicaid insurance (0.183) and sex (0.156).

Delay in Medical Care or Treatments

An important aspect of medical care is prompt attention to existing health problems. Respondents were asked about types of health problems for which medical treatment had been postponed and reasons for the delay in seeking medical help (both questions were open-ended). Table 6 indicates that

more than 40 percent of all migrant farm workers in the sample put off receiving some kind of medical care or treatment for an existing health problem. Among those who delayed medical care or treatment, 53 percent of recent migrants and more than 60 percent of long-term migrants reported delay in having dental work done, while 35 percent of immigrants postponed medical care for a variety of health problems, such as anemia, arthritis, blood in stools, high blood pressure, broken bones, cataracts, colds, headaches, nervousness, hernia, stomach ulcers, muscle contractions, and so on. (All these problems were grouped together as "others" for the analysis.) Twenty-three percent of immigrants and 21 percent of recent migrants reported that they put off treatments for a combination of medical problems, the most common of which were "eyes and dental work," "chest pains, colds and headaches." A relatively high proportion of immigrants (19 percent) indicated delaying regular physical checkups.

Among reasons for delaying medical treatments, lack of time was the most important for immigrants (57 percent). More than 77 percent of recent migrants and 50 percent of long-term migrants cited both time and economic costs as reasons. It is in-

Table 5. Knowledge and utilization of community health center in Wayne County by migrant status (column percentage)

Questions	Total	Immigrants	Recent migrants	Long-term migrants
Do you know whether there is a migrant health center in this community? ¹ (number responding)	212	49	59	104
Yes	76.34	54.96	70.86	89.59
No	23.66	45.04	29.14	10.41
Have you or any of your household members ever used the medical services in the center during the past 12 months? ² (number responding)	171	31	44	96
Yes	53.35	36.19	49.01	60.76
No	46.65	63.18	50.99	39.24
If yes, how would you rate your experience with the center? ³ (number responding)	91	10	22	59
Very bad or poor	7.75	7.25	6.49	8.30
Fair	20.75	11.71	6.34	27.62
Good or excellent	71.50	81.04	87.17	64.08

¹ $\chi^2 = 23.61, P < .001$. ² $\chi^2 = 6.06, P < .05$. ³ $\chi^2 = 5.28, P < .25$.

teresting to note that one-quarter of all migrant farm workers expressed fear of the medical profession or disbelief in it as a reason for not seeking medical services.

Statements made by some of the respondents are quite illuminating: "I am afraid of dentists," "Don't believe in doctors," "Don't like needles," "Don't like being cut into." These negative attitudes toward physicians and medical treatments were particularly strong among long-term migrants because they were older and less educated. Lack of accessibility, such as "no transportation," "poor communication with nurses," and "difficult to get an appointment," was also considered by many migrants (particularly immigrants and long-term migrants) as a barrier that prevented them from utilizing medical services.

Health Care in Wayne County

A special migrant health center was established in the town of Sodus some years ago, the only health center funded by the Federal migrant health program in Wayne County. Its services were originally directed toward migrant farm workers and their families. Later, the U.S. Department of Health and Human Services decided to integrate its migrant health program with its community health program (50). At the time of this study, the Sodus health center had been changed into a full-scale community health center and its services extended to the general population. Since the center continued to receive both migrant and community health funds, migrant farm workers who sought medical care in the center needed to pay only a reduced rate (\$3 per visit).

In our study, respondents were first asked whether they knew that a community health center existed in Wayne County. For those who did know, a second question was asked: "Have you or any of your household members ever used the medical services in the center during the past 12 months?" If the answer was positive, the respondent was asked to rate his or his family's experience with the center. The results of these questions are presented in table 5.

The data show that long-term migrants, as might be expected, were more knowledgeable about the center's existence than the other two groups, while immigrants were the least informed group. Of those who had knowledge about the community health center, more than 60 percent of long-term migrants or their family members had used the medical services of the center during the last year, but only one-third of immigrants had done so. Although the three migrant groups had different levels of knowledge and utilization of health care in Sodus Community Health Center, most migrants who had used the center's medical services rated their experience favorably, and no significant differences were found among the migrant groups in their assessment of medical services received from the center (table 5).

Discussion

A representative sample of 218 migrant farm workers was randomly drawn in Wayne County, New York during the summer of 1982. Number of visits to physicians for diagnostic and preventive medical care was analyzed in a multivariate model. The results indicate that migrant status is the most important variable to explain variations in visits to

Table 6. Delay of medical care or treatments by migrant status (column percentage)

Questions	Total	Immigrants	Recent migrants	Long-term migrants
Is there some kind of care or treatment that you have put off, even though you may still need it? ¹ (number responding)	217	51	60	106
Yes	41.37	35.39	50.92	38.90
No	58.63	64.61	49.08	61.10
What is this care or treatment for? ² (number responding)	86	16	30	40
Dental work	49.59	17.24	52.75	60.10
Eye problems	11.12	5.68	4.87	17.51
Checkup	6.70	19.00	2.60	4.67
Multiple medical problems	12.97	22.92	20.67	3.83
Other	19.62	35.16	19.11	13.88
Why have you put it off? ³ (number responding)	85	15	30	40
No time	32.83	57.09	40.31	17.90
Cost too much	31.72	17.92	37.37	32.81
Fear or disbelief in medical profession	24.95	12.83	19.10	33.99
Lack of access to medical profession	10.49	12.15	3.19	15.30

¹ $\chi^2 = 3.26, P < .10$. ² $\chi^2 = 19.82, P < .05$. ³ $\chi^2 = 12.28, P < .05$.

physicians among migrant farm workers. Specifically, immigrants had a significantly lower level of visits than long-term migrants, while recent and long-term migrants had similar utilization patterns (table 4).

Although the general health literature suggests that marital status, education, and income may be the best predictors of utilization, these variables did not have any significant effect on migrants' level of visits to physicians in our model. This unexpected finding may result from two factors. First, most of the respondents in our sample had a similar level of income (table 1) and were very homogeneous in economic background. Second, since migrant status reflects significant differences in age, marital status, and education (table 1), the strong effect of migrant status on physician visits may have reduced the explanatory power of these traditional predisposing variables. In order to test this hypothesis, four interaction terms (immigrant \times age, immigrant \times education, recent migrant \times age and recent migrant \times education) were added to the multiple regression model in a separate computer run. No statistical significance was found between these interaction terms and the dependent variable. Therefore, they were not included in the final model.

The model also indicated that Medicaid insurance had a significant positive effect on number of visits to physicians. It is reasonable to expect that an increase in visits to physicians may increase the probability of solving many untreated medical problems. Given the linkage between having Medicaid insurance, frequency of visiting physicians, and reduction of medical problems, however, the medical utilization patterns of migrant farm workers cannot

be expected to improve spontaneously, since less than 12 percent of migrants in our sample were covered by Medicaid insurance. Comprehensive health insurance coverage for all migrant farm workers, either under Medicaid or other well-designed programs, would be an important factor in making medical services available to them.

Another significant finding from the regression model is that visits of migrant farm workers to physicians vary with sex: female migrants tended to visit doctors more often than their male counterparts.

Based on the different patterns of visits to physicians found between men and women and between immigrants and native-born migrants, we may conclude that diagnostic and preventive medical care is particularly needed for male migrant farm workers in general and immigrants in particular. Data in table 6 also indicated that dental care has been generally neglected by a large proportion of native-born migrants. Finally, the results in table 5 showed that immigrants were least informed about the community health center and were less likely than other migrant groups to use its services. These findings provide public health professionals with an empirical basis to identify the target population for specific health service programs.

Although the multivariate model in general is significant in explaining variations in visits to physicians among migrant farm workers ($F = 2.175$), the explained variance of the dependent variable is relatively low (adjusted $R^2 = .0708$). The low R^2 may be attributed to the generally low level of physician visits by migrant farm workers, which would allow little variation for explanation in the first place. The

highly homogeneous racial and economic background among our respondents may also have reduced the explanatory power of many of the independent variables.

Future migrant health studies should be extended to include other counties (such as Orange County, NY) in which Hispanic migrants are centered, so that racial and ethnic makeup may be used as a key independent variable in explaining medical utilization patterns. Further, information on medical utilization should be collected in a longitudinal study. Measures of need for health care and responses to psychological questions on health attitudes and beliefs should be obtained prior to collecting data on visits to physicians so that such antecedent variables can be incorporated in the multivariate causal model.

The data in table 6 showed that a substantial proportion of migrant farm workers cited fear of medical practices and disbelief in the medical profession as reasons for delaying some medical treatments. To change these negative attitudes and perceptions, accurate materials on health care and proper health education programs are urgently needed (51,52). In several ways, the Cooperative Extension services of land grant universities seem to be most appropriate for this task. Historically, they are devoted to public education, and they already enjoy a positive relationship with people and organizations in local areas. They are able to work with all socioeconomic groups and to reach out to migrant farm workers. Cooperative extension has considerable expertise in delivering information and in using multiple teaching techniques (53,54). Migrant health education might be linked with existing extension programs, for example, to develop a migrant health education program that involves 4-H youth through extension.

Many respondents reported lack of time and lack of access as reasons for not seeking health care (table 6). Since migrant farm workers usually have a busy working schedule in the harvest season, special health services should be provided for them after working hours or during weekends. Appropriate actions to increase accessibility to the medical profession and health care facilities would include providing special transportation for migrant farm workers who live a long distance from the health center, speeding up medical appointments, shortening waiting time, and promoting communication between the medical profession and migrant workers.

Health care is a continuous process, but the seasonal mobility of migrant farm workers disrupts that continuity. Medicaid insurance may have the poten-

tial to provide continuous health care for migratory farm workers, but only a small proportion of them (less than 12 percent in our sample) had actually benefited from the program.

Recent Federal health policy has emphasized the integration of migrant health programs with community health programs. However, jointly funded community health centers throughout the entire country are quite scarce (only 78 such centers were operating in 1979). Also, even though there was a jointly funded health center in our study area and 76 percent of migrant farm workers knew of its existence, only 53 percent of the total sample had used the center's services in 1981 (table 5). Moreover, at jointly funded centers, limited attention is being given to matching the level of funding and the level of services for migrants. For example, a recent government study reports that a Florida center had 62 percent of its funding from the Federal migrant health program but that migrants made up only 43 percent of its patient load in 1979 (50).

In order to provide comprehensive and continuous health care for migrant farm workers, a health voucher system should be considered as an additional method of health delivery. Health vouchers can be offered directly to eligible migrant farm workers, who may use the vouchers to purchase health services not only from migrant health centers and community health centers but also from other health providers in the market. The health providers would be reimbursed by the Federal migrant health fund. Further, migrant farm workers would be able to use health vouchers whenever and wherever they needed medical care. This system, in principle, would provide migrants with greater freedom to seek continuous health care. Further analysis of this strategy is definitely needed.

In sum, the results of the present study show conclusively that the provision of comprehensive health programs, removal of structural barriers in the health delivery system, and a program of migrant health education are the steps needed to alter the medical utilization behavior of migrant farm workers.

References

1. Friedland, W. H., and Nelkin, D.: Migrant agricultural workers in America's Northeast. Holt, Rinehart and Winston, New York, 1971.
2. Larson, O. F., and Sharp, E. F.: Migratory farm workers in the Atlantic Coast stream. Cornell University Agricultural Experiment Station, Ithaca, NY, 1959.
3. Young, R. C., et al.: Migrant farm workers in western New York, 1978. Department of Rural Sociology, Cornell University, Ithaca, NY, 1979.

4. Anderson, W. W., and Kane, R. L.: Patterns of care given migrant workers in Utah by private physicians and clinics. *Public Health Rep* 92: 326-331, July-August 1977.
5. Chapman, A. I.: Migrant health project in Pennsylvania, 1963. *Public Health Rep* 79: 561-566, July 1964.
6. Harkness, J. P., and Dougherty, W. J.: A summer health project organized and conducted by medical students. *Industrial Medical Surgery* 37: 433-437, June 1968.
7. Rudd, P.: The United Farm Workers clinic in Delano, Calif.: A study of the rural poor. *Public Health Rep* 90: 331-339, July-August 1975.
8. Bleiweis, P. R., et al: Health care characteristics of migrant agricultural workers in three north Florida counties. *J Community Health* 3: 32-43 (1977).
9. Slesinger, D., and Cautley, E.: Medical utilization patterns of Hispanic migrant farmworkers in Wisconsin. *Public Health Rep* 96: 255-263, May-June 1981.
10. Becker, M. H.: The health belief model and sick role behavior. *Health Educ Monographs* 2: 409-419 (1974).
11. Gochman, D. S.: The organizing role of motivation in health beliefs and intention. *J Health Soc Behav* 13: 285-293, September 1972.
12. Rosenstock, I. M.: Why people use health services. *Milbank Mem Fund Q* 44: 94-127, July 1966.
13. Rosenstock, I. M.: Prevention of illness and maintenance of health. *In Poverty and health: a sociological analysis* edited by J. Kosa, A. Antinovsky, and I. K. Zola. Harvard University Press, Cambridge, MA, 1969, pp. 168-190.
14. Yelin, E. H., et al: Is health care use equivalent across social groups? A diagnosis-based study. *Am J Public Health* 73: 563-571, May 1983.
15. Zastowny, T. R., et al: Satisfaction with medical care: replications and theoretic reevaluation. *Med Care* 21: 294-322, March 1983.
16. Coburn, D., and Pope, C. R.: Socioeconomic status and preventive health behavior. *J Health Soc Behav* 15: 67-78 (1974).
17. Dutton, D. B.: Explaining the low use of health services by the poor: costs, attitudes, or delivery systems? *Am Sociol Rev* 43: 348-368, June 1983.
18. Eabrega, H., Jr., and Roberts, R. E.: Ethnic differences in the outpatient use of a public-charity hospital. *Am J Public Health* 62: 936-941 (1972).
19. Moody, P. M., and Gray, R. M.: Social class, social integration and the use of preventive health services. *In Patients, physicians and illness*, edited by E. G. Jaco. Free Press, New York, 1972, pp. 250-261.
20. Hoppe, S. K., and Heller, P. L.: Alienation, familism and the utilization of health services by Mexican Americans. *J Health Soc Behav* 16: 304-314, September 1975.
21. Suchman, E. A.: Sociomedical variation among ethnic groups. *Am J Sociol* 70: 319-331 (1964).
22. Zola, I. K.: Culture and symptoms: an analysis of patients presenting complaints. *Am Sociol Rev* 31: 615-630 (1966).
23. Bashshur, R. L., Shannon, G. W., and Metzner, C. A.: Some ecological differentials in the use of medical services. *Health Serv Res* 6: 49-60, spring 1971.
24. Gross, P. F.: Urban health disorders, spatial analysis, and the economics of health facility location. *Int J Health Serv* 2: 54-63, February 1972.
25. Okada, L. M., and Sparer, G.: Access to usual source of care by race and in ten urban areas. *J Community Health* 1: 163-174 (1976).
26. Weiss, J. E., and Greenlick, M. R.: Determinants of medical care utilization: the effect of social class and distance on contacts with the medical system. *Med Care* 8: 456-462, November-December 1970.
27. Williams, A. P., et al: How many miles to the doctor? *N Engl J Med* 309: 958-963, Oct. 20, 1983.
28. Greenlick, M. B., et al: Comparing the use of medical care services by a medically indigent and a general membership population in a comprehensive prepaid group practice program. *Med Care* 10: 187-200 (1972).
29. Reynold, R. A.: Improving access to health care among the poor—the neighborhood health center experience. *Milbank Mem Fund Q* 54: 47-82 (1976).
30. Smith, D. B., and Kaluzny, A. D.: Inequality in health care programs: a note on some structural factors affecting health care behavior. *Med Care* 12: 860-870 (1974).
31. Aday, L. A., and Andersen, R.: A framework for the study of access of medical care. *Health Serv Res* 9: 208-220 (1974).
32. Andersen, R., and Newman, J.: Societal and individual determinants of medical care utilization in the United States. *Milbank Mem Fund Q* 51: 95-124 (1973).
33. Bice, T. W., and White, K. L.: Factors related to the use of health services: an international comparative study. *Med Care* 7: 124-133 (1969).
34. Brook, R. H., et al: Does free care improve adults' health? *N Engl J Med* 309: 1426-1434, Dec. 8, 1983.
35. Davis, K., and Marshall, R.: New developments in the market for rural health care. *In Research in health economics*, Vol. 1, edited by R. M. Scheffler, JAI Press, Greenwich, CT, 1979, pp. 57-110.
36. Wan, T. H., and Soifer, S. J.: Determinants of physician utilization: a causal analysis. *J Health Soc Behav* 15: 100-108 (1974).
37. Wolinsky, F. D.: Health service utilization and attitudes toward health maintenance organizations: a theoretical and methodological discussion. *J Health Soc Behav* 17: 221-236 (1976).
38. Chi, P. S. K.: A new sampling procedure for surveying health conditions of migrant farm workers. Paper presented at the Annual Meeting of the Rural Sociological Society, College Station, TX, Aug. 22-25, 1984.
39. Foner, N., and Napoli, R.: Jamaican and Black-American migrant farm workers: a comparative analysis. *Social Problems* 25: 491-503, June 1978.
40. Friedland, W.: Labor waste in New York: rural exploitation and migrant workers. *Transaction* 6: 48-53 (1969).
41. Nelkin, D.: Unpredictability and life style in a migrant labor camp. *Social Problems* 17: 472-487 (1970).
42. Aday, L. A., and Eichhorn, R.: The utilization of health services: indices and correlates, a research bibliography. DHEW Publication No. 73-3003. National Center for Health Services Research and Development, Washington, DC, 1972.
43. Andersen, R.: A behavioral model of families' use of health services. Research Series No. 25. Center for Health Administration Studies, Chicago, 1968.
44. Purola, T.: A system approach to health and health policy. *Med Care* 10: 373-379 (1972).
45. Wan, T. H., and Soifer, S. J.: A multivariate analysis of determinants of physician utilization. *Socio-Economic Planning Sciences* 9: 229-237 (1975).
46. Blackwell, B.: The literature of delay in seeking medical care for chronic illness. *Health Educ Monographs* 16: 3-31 (1963).
47. Center for Applied Linguistics: The people and culture of Haiti. Washington, D.C., 1982.

48. Simpson, G. E.: Religious cults of the Caribbean: Trinidad, Jamaica, and Haiti. University of Puerto Rico, Rio Piedras, 1970.
49. Okada, L. M., and Wan, T. H.: Impact of community health centers and Medicaid on the use of health services. *Public Health Rep* 95: 520-534, November-December 1980.
50. Problems in the structure and management of the migrant health program. HRD-81-92. U.S. General Accounting Office, Washington, DC, 1981.
51. McNerney, W. J.: The missing link in health service. *J Med Educ* 50:11-23, January 1975.
52. Snyder, L. J.: Rural health education—an idea whose time has come. *Health Educ Monographs* 3: 6-11, spring 1975.
53. Johnston, H. L., and Crawford, C.: Potentials for interstate interagency cooperation. *Health Educ Monographs* 3: 44-49, spring 1975.
54. Lentz, J. C.: The road ahead—challenges for cooperative action. *Health Educ Monographs* 3: 115-119, spring 1975.

Effectiveness of Home Visits by Public Health Nurses in Maternal and Child Health: an Empirical Review

TERRI COMBS-ORME, PhD
 JANET REIS, PhD
 LYDIA DANTES WARD, RN, MSN

Dr. Combs-Orme is an Assistant Professor at the School of Social Work, Louisiana State University, Baton Rouge. At the time this article was written, she was Assistant Professor at the Center for Health Services and Policy Research, Northwestern University. Dr. Reis is an Assistant Professor and the Director of Maternal and Child Health, Center for Health Services and Policy Research, Northwestern University. Ms. Ward is an Assistant Professor in the Department of Public Health Nursing, College of Nursing, University of Illinois at the Medical Center, Chicago.

This work was partially supported by grants to the Center for Health Services and Policy Research by the Ford Foundation and the Chicago Community Trust.

Reprints requests to Janet Reis, PhD, Director of Maternal and Child Health, Center for Health Services and Policy Research, Northwestern University, 629 Noyes St., Evanston, IL 60201.

Synopsis

The effectiveness of public health nursing in promoting maternal and child health through home visits is summarized from empirical studies published between 1960 and 1984. Eight reports identified through a comprehensive reference search were first classified according to the components of nursing service studied (assessment, teaching,

counseling or support, referral, and clinical services). The results of each study were then analyzed for study population characteristics, the research design and statistical methods employed, the reliability of the measures used, significant treatment effects, sample size, and statistical power.

The research is evenly divided among studies employing an experimental design, a quasi-experimental design, and samples of low-income and middle-income mothers. The reliability of the measures was, with one exception, not reported. All but one study had final sample sizes for treatment and control or comparison groups of fewer than 100 subjects. Four of the studies thus had sample sizes sufficiently large to detect a medium treatment effect; power calculations showed that none could measure a small treatment impact.

Within the methodological limitations of these studies, our review found that under certain circumstances public health nurses can effectively impart health knowledge to high-risk mothers and can effect positive change in maternal attitudes and parenting practices that in turn can be associated with positive changes in infant health and development.

Cumulative knowledge from this body of research suggests that a priority for future evaluations of public health nursing is development of theoretical frameworks that maximize the fit between the needs of the population served and the services provided and between the outcomes measured and the nursing services being assessed.

HISTORICALLY, PUBLIC HEALTH NURSES have been viewed as advocates of the poor, the disadvantaged, minorities, and any population groups in need of community-based, prevention-oriented

health care services. As early as 1859, with the founding of the first district nursing association, nurses were viewed not as mere attendants of the sick, but as social reformers (1). Public health